

1. PURPOSE AND NEED FOR AGENCY ACTION

1.1 INTRODUCTION

This environmental assessment (EA) has been prepared by the U.S. Department of Energy (DOE), in compliance with the National Environmental Policy Act of 1969 (NEPA) as amended (42 USC 4321 et seq.), to evaluate the potential environmental impacts associated with constructing and operating an integrated multi-pollutant control system proposed by CONSOL Energy Inc. and AES Greenidge LLC. The EA will be used by DOE in making a decision on whether or not to provide cost-shared funding to design, construct, and demonstrate the proposed system at the existing 107-MW Unit 4 of Applied Energy Services' (AES's) Greenidge Station in Dresden, New York. DOE's share of the funding for the 4.5-year demonstration project is expected to be about \$14.5 million, while about \$18.3 million would be provided by CONSOL and its project partners. The project has been selected by DOE under the Power Plant Improvement Initiative (PPII) to demonstrate the integration of technologies to reduce emissions of sulfur dioxide (SO₂), oxides of nitrogen (NO_x), sulfur trioxide (SO₃), mercury (Hg), hydrogen chloride (HCl), and hydrogen fluoride (HF) from smaller (<300 MW) coal-fired boilers.

The U.S. Congress established the PPII in Pub. L. 106-291, Department of the Interior and Related Agencies Appropriations Act for Fiscal Year 2001. Congress directed DOE to provide up to \$95 million in cost-shared funding to demonstrate commercial-scale technologies that improve the reliability and environmental performance of existing and new coal-fired power plants in the United States. Congress expected the selected technologies to provide options by which coal plants could continue to generate low-cost electricity with improved performance and in compliance with stringent environmental standards.

The PPII Solicitation, issued in February 2001, required participants (i.e., the non-federal-government participant or participants) to offer projects having potential for demonstrating substantial improvements in power plant performance, leading to enhanced electric reliability. These improvements included increased efficiency of electricity production, reduced environmental impacts, and/or increased cost-competitiveness. The projects were also required to be applicable to a large portion of existing plants and of commercial scale in order to enhance opportunities for timely deployment.

In response to the solicitation, DOE received 24 proposals in April 2001 and selected 8 of the projects in September 2001 based on the following evaluation criteria: technical merits of the proposed technology (40%), commercial viability and market potential of the proposed technology (30%), and management approach and capabilities of the project team (30%). Along with the technical merits, DOE considered the participant's funding and financial proposal; DOE budget constraints; environmental, health and safety implications; and program policy factors. Following selection, two of the projects were withdrawn by their participants in March 2002 and in October 2002.

Each project participant is required to finance at least 50% of the total cost of the project. After completion of a successful project demonstration, the participant would be obligated to repay the government's financial contribution to ensure that taxpayers benefit from a successful project. The project participant takes primary responsibility for

designing, constructing, and demonstrating the project. During project execution, the government oversees project activities, provides technical advice, assesses progress by periodically reviewing project performance with the participant, and participates in decision making at major project junctures. In this manner, the government ensures that schedules are maintained, costs are controlled, project objectives are met, and the government's funds are repaid.

DOE expects to provide approximately \$51 million for the 6 remaining projects. Private sector sponsors are expected to contribute nearly \$61 million, exceeding the 50% private sector cost-sharing mandated by Congress. The host sites for the projects cover a large geographical cross-section of the United States, including Florida, Virginia, New York, Ohio, South Dakota, and Kansas. The duration of the demonstration projects ranges from slightly over a year to five years.

1.2 PROPOSED ACTION

The proposed action is for DOE to provide cost-shared funding support for the design, construction, and demonstration of an integrated multi-pollutant control system at the existing 107-MW Unit 4 of AES's coal-fired Greenidge Station in Dresden, New York. DOE's share of the funding for the 4.5-year demonstration project is expected to be about \$14.5 million, while about \$18.3 million would be provided by CONSOL and its project partners. The commercial-scale demonstration would allow utilities to make decisions regarding the integrated emissions control system as a viable commercial option.

CONSOL Energy Inc. and AES Greenidge LLC conceived and proposed the technologies in response to the DOE solicitation. Because DOE's role would be limited to providing the cost-shared funding for the proposed project, DOE's will decide whether or not to fund the project. DOE's limited involvement constrains the range of alternatives considered in the EA (Section 2.2), and DOE will make its decision based on those alternatives.

1.3 PURPOSE

The purpose of the proposed project is to generate technical, environmental, and financial data from the design, construction, and operation of the proposed combination of technologies to allow industry to assess the project's potential for commercial application. The proposed combination of technologies is designed to reduce the capital and operating costs of environmental controls for SO₂, NO_x, SO₃, HCl, HF, Hg, and visible emissions. A demonstration indicating that the performance and cost targets are achievable at the 100-MW scale would convince potential customers in the smaller boiler market that the integration of these systems is not only feasible but economically attractive.

1.4 NEED

The need for the proposed project is to address the Congressional mandate in Public Law 106-291 to demonstrate technologies at the commercial scale that improve the reliability and environmental performance of existing and new coal-fired power plants in the United States. DOE's cost-shared funding would help reduce the financial risk to the project participant in demonstrating the proposed combination of technologies:

the single-bed selective catalytic reduction (SCR) system and the circulating dry scrubber (CDS).

The smaller boiler market is the target for the proposed combination of technologies. Currently, there are about 500 units in the United States less than 300 MW in size with a combined generating capacity of about 69,000 MW, which represents about 25% of the installed coal-based generating capacity and almost 50% of the installed boilers. The 500 units are the target market for this combination of technologies because, based on information developed from potential purchaser interviews, the smaller boilers are likely to either switch fuel or be retired in the future. If only the 190 boilers less than 110 MW are retired, the generating capacity would be reduced by up to 16,000 MW, which would exacerbate electricity and natural gas supply and distribution problems throughout the United States. Therefore, a strong incentive exists to commercialize technologies designed specifically to meet the environmental compliance needs of the smaller generating units. Because the SCR system is a low-cost option for controlling NO_x emissions from smaller generators and allows greater fuel flexibility, such as co-firing coal and biomass, it provides a feasible alternative to retiring units as NO_x allocations are reduced and the NO_x credit market tightens.

1.5 NATIONAL ENVIRONMENTAL POLICY ACT STRATEGY

This EA has been prepared in compliance with NEPA for use by DOE decision-makers in determining whether or not to provide cost-shared funding for the design, construction, and demonstration of the proposed project under the PPII solicitation. DOE's policy is to comply fully with the letter and spirit of NEPA, which ensures that early consideration is given to environmental values and factors in federal planning and decision making. No action taken by DOE with regard to any proposal, including project selection or award, is considered a final decision prior to completion of the NEPA process.

For this proposed project, DOE has determined that an EA should be prepared to assess the significance of potential impacts resulting from the proposed action and reasonable alternatives. The purpose of the EA is to provide a sufficient basis for determining whether DOE should then prepare an Environmental Impact Statement (EIS) or should issue a Finding of No Significant Impact (FONSI). Based on the findings of this EA, if DOE determines that providing cost-shared funding would constitute a major federal action because the proposed project may significantly affect the quality of the human environment, then an EIS will be prepared to assess the potential impacts in more detail. However, if DOE determines that providing cost-shared funding would not constitute a major federal action because the proposed project would not significantly affect the quality of the human environment, then DOE will issue a FONSI.

The Oak Ridge National Laboratory (ORNL) has assisted DOE in preparing this EA and supporting documents for the proposed project. In independently assessing the issues and preparing the EA, ORNL has utilized information provided by DOE; other federal, state, and local agencies; the project participant team; and others. DOE is responsible for the scope and content of the EA and supporting documents and has provided direction to ORNL, as appropriate, in the preparation of these documents.

The issues that have been identified and evaluated in the EA include land use, aesthetics, atmospheric resources, water resources, geological resources, floodplains,

wetlands, ecological resources, waste management, cultural resources, socioeconomic resources, transportation, noise, electromagnetic fields, and human health and safety. Related evaluations include impacts of commercial operation, cumulative effects, regulatory compliance and permit requirements, irreversible or irretrievable commitments of resources, and the relationship between short-term uses of the environment and long-term productivity. The scope of the assessment includes upgrades and alterations to Greenidge Station that are not considered part of the proposed project (i.e., replacing the secondary superheater section, installing low-NO_x burners, and potentially replacing the economizer and primary superheater sections) because they are inseparably linked with the proposed project (i.e., the integrated multi-pollutant control system would require much of the combined equipment, which would be installed concurrently).